INSTRUCTION MANUAL

EVER®
POWER SYSTEMS

INSTRUCTION MANUAL
DUO II / DUO II PRO

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INTRODUCTION

Thank you for purchasing the DUO II / DUO II Pro UPS. Please familiarise yourself with this instruction manual before you begin using the device. We hope that the purchased UPS will meet your expectations.

EVER **DUO II / DUO II Pro UPSs** protect the devices connected to them from mains power losses, voltage drops and eliminate the danger of damages caused by overvoltage in the mains.

Their main purpose of the EVER **DUO II / DUO II Pro** series UPSs is to protect computers, computer peripherals and fiscal devices.

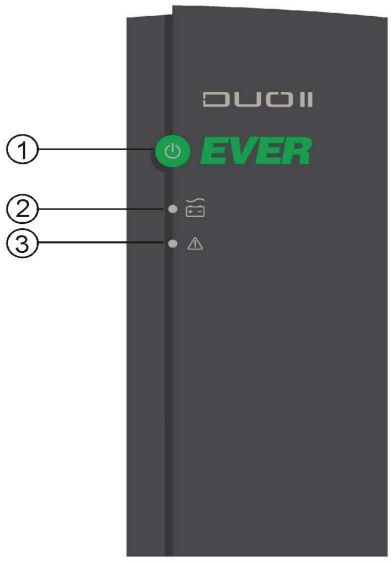
GENERAL FEATURES OF THE UPS

- Four IEC 320 outlet sockets with emergency power supply
- Synchronisation with the mains
- **"Cold start" –** option of starting the UPS without connection to the mains
- Acoustic signalling of low battery level
- Microchip control of all operating parameters
- Resistance to overloads
- Protection against shorting
- Telecommunication filter
- Circuit breaker
- Communication with a computer via USB port – only DUO II Pro UPSs.

	WARNING! DUO II / DUO II Pro UPSs were not designed to work with medical equipment, in particular life and/or health support devices.

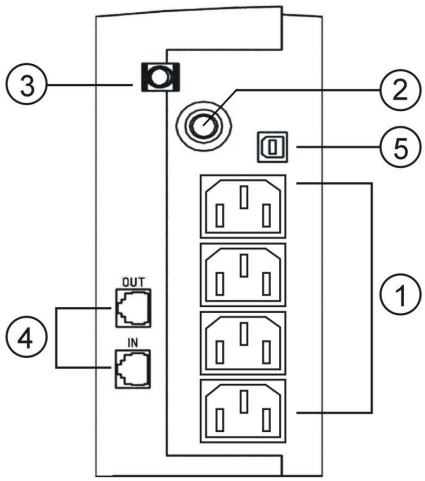
ELEMENTS OF THE UPS

FRONT PANEL



1. Power switch
2. Operation mode indicator
3. Malfunction indicator

REAR PANEL

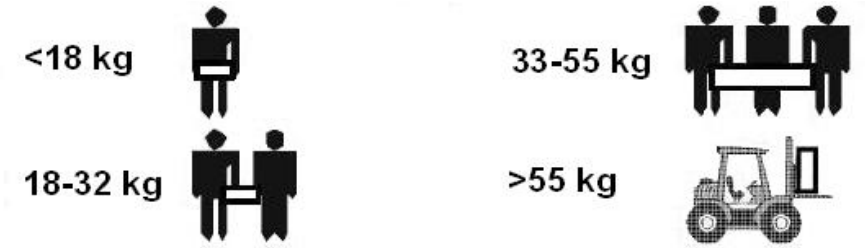


1. 4 x IEC 320 outlet sockets
2. 10 A circuit breaker
3. Power lead
4. RJ telephone filter
5. Communication port (USB) – only DUO II Pro UPSs.

SAFETY AND HEALTH INSTRUCTIONS

HANDLING

- exercise utmost caution when handling the device;
- do not handle heavy equipment by yourself;



- storage and operation of the device should take place in conditions conforming to its specification.

ELECTRIC SAFETY

- storage and operation of the device should take place in conditions conforming to its specification;
- even a momentary shorting of a strong current may lead to severe burns;
- before connecting the device to the mains inspect the condition of power leads, plugs and sockets, as well as the condition of the device itself;
- the device must be plugged in to a three-lead sockets (two poles and earthing) – connecting the device to any other socket may result in electric shock;
- A device powered via a lead with a plug has an earthing lead that carries away the leakage current from the receivers (e.g. computer equipment) – the total leakage current must not exceed 3.5 mA.
    - Users are forbidden to carry out any maintenance activities, as they may lead to injury or death. Any repairs and replacement of batteries should be conducted only by a qualified representative of the technical support;
- **Since the device is equipped with internal power source (batterry) the output may provide voltage even though the device itself is not connected to the mains;**
- The recommended operating temperature for the device is 15-25℃. Maximum operating temperature is 40℃;

Disconnect the device from the mains before cleaning. Do not use liquid or sprayed cleaning agents;

	WARNING! DUO II / DUO II Pro UPSs were not designed to work with medical equipment, in particular life and/or health support devices.

	WARNING! Opening the casing may result in electric shock.

	WARNING! The UPS is disconnected from the mains only when the power lead is removed from the mains socket.

INSTALLATION

UNPACKING

After unpacking, please inspect the device for damages. If you spot any damages, please return the UPS in its original packaging to the dealer in accordance with the procedure described at www.ever.eu / warranty service.

	WARNING! The device is delivered with its accumulator connected.

Check the contents of the packaging. The packaging should contain:

- The UPS,
- quick reference guide,
- IEC 320 cables – 2 sets,
- USB cable (only PRO models),
- warranty card.

CHOOSING THE INSTALLATION SPOT

The battery should only be used in rooms whose dustiness, temperature and moisture levels conform with the device's specification (see Technical parameters table). In order to ensure correct operation of the battery, appropriate cooling conditions must be provided. That is why the UPS should be placed at least at a 20 cm distance from other objects.

The mains socket the UPS is to be connected to should be located near the battery (maximum distance – 1,5 m) and should be easily accessible.

	WARNING! The device must not be installed in the proximity of flammable materials!

CONNECTING THE UPS

Due to the type and placement of cut-outs present in the UPS the safety circuits of the building function as one of the protection measures. **This is essential to provide the UPS with shorting protection. The UPS may only be connected to a ~230V mains socket equipped with a grounding bolt.**

WARNING! After unpacking, place the device in the chosen spot without connecting the load (computer, monitor etc.), connect it to the mains and turn on the UPS with the switch located on the front panel in order to charge the internal batteries. After at least 10 h (see Table 1) the batteries will have charged and the user may continue with the installation procedure.

Batteries' batteries reach their full capacity after approximately a month of mains operation mode.

Next, connect the computer or other peripherals to one of the sockets located on the rear panel of the UPS. You can connect a total of four devices whose total power does exceed 80% of the UPSs maximum power. Remove the plug from the mains socket and verify the operation of the system.

After installing the software on the computer you should also verify the communication (PRO models).

DESCRIPTION OF THE UPS'S OPERATION

It is possible to start the UPS in the battery operation mode without connection to the mains (the connected devices are powered until input voltage returns or until the batteries are depleted).

The UPS will indicate readiness by lighting up the LEDs and a continuous acoustic signal and then switch on in the battery operation mode, powering the devices connected to the output.

WARNING! Since computer monitors draw varied current upon switching on, it may lead to problems with starting the UPS and the connected devices. In such cases please try to start the UPS again when the mains voltage is back.

The main task of the UPS is to supply power to the devices connected to its output. Power is supplied from the batterry in cases when the level of input voltage exceeds the upper or lower threshold or when lack thereof is detected. The support time

depends on the capacity of the internal batterry and the power of devices currently connected to the output (load).

If the parameters of the mains voltage delivered to the UPSs input are correct, the battery will operate in the condition known as **mains operation mode**.

While in the mains operation mode the input voltage is conducted to its output via the anti-overvoltage circuit.

The condition in which the UPS is supplying power from its internal batteries is known as the **battery operation mode**. While in this mode, special circuits are activated which detect extreme and unacceptable operating conditions, such as **overloads** or output **shortings**. The final stage of depletion of the battery while in the battery operation mode is signalled optically and acoustically (see Table 1).

Switching on the power switch is accompanied by a continuous acoustic signal and lighting of the green and red LEDs. Next, the UPS switches to the appropriate operation mode.

Table 1

Optical signalling	Mains operation mode	Green LED is constantly lit
	Battery operation mode	Green LED blinks every 4 seconds
	Battery depleted in battery operation mode	Green LED blinks every second
	Shorting	Red LED is constantly lit
	Overload	LEDs are not lit
	UPS malfunction	Red LED is constantly lit
Acoustic signalling	Battery operation mode	Signal every 4 seconds
	Battery low	Signal every second
	Shorting	Continuous signal
	Overload	Signal every 0.5 seconds
	UPS malfunction	Continuous signal

WARNING! In situations when the battery is nearing depletion the UPS may turn off without prior warning should the load increase.

SAFEGUARDS

Against overloads

The overload protection circuit indicates an overload in the mains operation mode at loads exceeding 110% of nominal power with a constantly lit up red LED and a continuous sound signal (DUO II 350/500) or with a flashing red LED and an intermittent sound signal (DUO II 800/1000). If this condition is maintained for a longer period of time, the UPS will switch off automatically. The greater the overload, the faster the UPS will switch off. Excessive loads while in battery operation mode will lead to the UPS switching off.

Against shorting

Protection against shorting on the input side is provided by a circuit breaker. Additionally, the output of the UPS in battery operation mode is protected by an electronic safeguard whose triggering is indicated by constant light of the red LED and a continuous acoustic signal. If the shorting at the UPSs output persists for longer that 0.5 seconds while in battery operation mode, voltage is disconnected from outlet sockets while the UPS remains in the signalling mode. The battery has to be turned back on manually by the user.

Against overloads

In mains operation mode with loads exceeding 110% of nominal power the battery back-up indicated the overload status with a quick intermittent sound signal (twice a second). If this condition persists the battery back-up will switch off automatically. The greater the overload, the faster the back-up will switch off. In battery operation mode excessive load causes the battery back-up to switch off.

COMMUNICATION BETWEEN THE UPS AND A COMPUTER

DUO II Pro battery back-ups are equipped with a USB port enabling communication of the UPS with a computer. The device is supplied with a CD-ROM featuring the PowerSoft programme and a USB communication cable. In order to ensure proper operation of the system, please install the PowerSoft programme first and then connect the battery back-up to a free USB port on your computer with the supplied communication cable. Connecting the battery back-up to the computer with the USB cable before PowerSoft is installed will cause the Windows system to set default drivers, which prevents communication of the UPS with the computer. **If the software is not installed while the connection is made, then random conditions (PNP or others) may occur, which may lead to incorrect operation of the battery back-up.**

SOFTWARE INSTALLATION

INSTALLATION AND CONFIGURATION OF THE POWERSOFTPERSONAL SOFTWARE

Installation on computers with Windows

Before beginning the installation of PowerSoft:

- Uninstall the current version of PowerSoft or any other control software (in situations where the user is changing the UPS protecting the computer),
- If the UPS will communicate with the PC via a USB cable, this cable should be initially disconnected from the computer. The software installer will prompt the user to connect the communication cable at the appropriate time.

In order to install PowerSoft on a computer with Windows (the list of operating systems compatible with the application is available at www.ever.eu) just run the software installer and follow the instructions onscreen. During the installation you will be asked to select the model of the UPS connected to the computer on which the software is being installed. This setting may also be changed when the application is running.

In the case of a UPS connected to the computer via a USB cable, when the software installation is complete, the PowerSoft Personal installer will ask the user to connect the USB cable to the computer. The system will announce that a new device has been found and will propose to install the drivers. Select the option to install the drivers from a chosen location and on the next screen indicate the installation folder

of the PowerSoft software (usually *C:\Program Files\PowerSoft*) to be searched. Next, the operating system will located and install the appropriate driver.
In the case of Windows Vista the operating system will not initiate automatic installation of the drivers from the hard drive. After connecting the USB cable to the computer you will need to open the control panel from the Start Menu and select system properties. On the device tree displayed find the USB bus branch (in most cases it will be already expanded) and select the UPS. Update the device's driver from it's "Properties" window by right-clicking it in the list and following the instructions onscreen. As the driver's location you should indicate the PowerSoft installation folder (usually *C:\Program Files\PowerSoft*).
To uninstall PowerSoft select the "Uninstall PowerSoft" option in Start Menu. You can also uninstall PowerSoft from the "Add and remove programs" menu in the control panel.

Installation on computers with Linux/Unix

The binary version of the application for Linux/Unix systems is provided in the following formats:

CentOS, RedHat, Suse Linux, Fedora Core

For the CentOS, RedHat, Suse Linux, and Fedora Core systems the software is provided in the form of a RPM package. The software can be installed by using any package manage available for the system installed. If you are using the command line the software is installed by entering the following command:

```
rpm –ivh powersoftpersonal-x.x.x.i386.rpm
```

Users working with the PowerSoft must have root privileges to install the software and use it. After installation the application may be found in the /usr/local/PowerSoft directory.

To uninstall the application enter the following command:

```
rpm –ev powersoftpersonal-x.x.x
```

Debian

For the Debian systems the software is provided in the form of a DEB package. The software is installed via the following command:

```
dpkg –-install powersoftpersonal-x.x.x.deb
```

To uninstall the application enter the following command:

dpkg –-remove powersoft

FreeBSD

For FreeBSD systems the software is provided in the form of the default package format designed for FreeBSD systems. The software is installed via the following command:

pkg_add powersoftpersonal-x.x.x.tbz

To uninstall the application enter the following command:

pkg_delete powersoft

	WARNING! FreeBSD systems do not support communication with the UPS via the USB cable

Starting the software

After installation the system service is started automatically, while the control panel application can be found at */usr/local/powersoft.*

Please note that for the Polish diacritics to be correctly displayed the system locale should be Polish.

Software updates

Windows systems

The software installer for Windows systems has a built-in automatic updater. PowerSoft may regularly check for new software versions and notify the user when updates are available. By default the software check for updates after user log-in. This setting may be changed in the "Update configuration" item in the system's programme menu.

Linux/Unix systems

In the case of Linux/Unix systems PowerSoft may be updated by downloading the new package from www.ever.eu.

In the case of CentOS, RedHat, Suse Linux, and Fedora Core PowerSoft may be updated by entering the following command:

rpm –Uv powersoftlite-x.x.x

In the case of Debian and FreeBSD systems we recommend uninstalling the old version and then installing the new version of the software. Commands which enable these operations are described in the instruction manual available at www.ever.eu.

ADDITIONAL REMARKS

	WARNING! DUO II / DUO II Pro UPSs are designated as class C2. In domestic environment they may interfere with reception of radio waves so the user may be forced to implement additional preventive measures.

	WARNING! Inside the UPS there are no elements to be serviced by the end user.

CUT-OUT

The UPS is equipped with a resettable circuit breaker. While in normal operation mode of the UPS the breaker's button should be pressed in. Triggering the cut-out causes the above-mentioned button to pop out. After removing the condition that triggered the cut-out, wait a few minutes before pressing the button back in. If the cut-out is triggered again after the UPS is switched on, please contact technical support.

UPS AND POWER GENERATORS

By design, the UPS tolerates mains voltage variations in the range of 190 ÷ 259V, as well as frequency variations of ±5 Hz with relation to the nominal frequency of 50 Hz. Power generators are characterised by variable frequency of the output voltage, which depends on the changes in the load values. If the variations of frequency of the output voltage exceed the allowed tolerance thresholds (ie. ±5Hz), the UPS will consider the parameters of the input voltage to be incorrect and it will switch to battery operation mode.

USING THE TELECOMMUNICATION FILTER

In order to protect the (analogue) telephone line and connected telecommunication devices such as modems or landline telephones, the DUO II UPSs are equipped with an anti-overvoltage filter which safeguards the devices connected against overvoltages in the telephone line. In order to properly utilise the built-in filter it is necessary to connect the device to the filter socket marked as OUT with a cable with RJ11 terminators, and connect the existing telephone line with a cable of the same type to the other socket of the filter marked as IN.

	WARNING! Do not connect LAN cables with RJ45 terminators because it may interrupt the transmission.

STORAGE, MAINTENANCE AND TRANSPORT

The UPS should be stored in a cool and dry place, in operating position, with batterries completely charged:

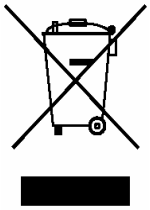
- In temperature between 0℃ and +30℃ the batterry should be charged every 6 months;
- In temperature between +30℃ and +45℃ the batterr y should be charged every 3 months.
- In order to maintain the capacity of batterries the user should disconnect the power lead once every 6 months in order to deplete the batterries (with load connected) and then charge them again.

The UPS should be transported in the original packaging and in conditions conforming to the product's specification. If the original, complete packaging is missing, EVER Sp. z o.o. shall not be responsible for any mechanical damages that occur in transport.

DISPOSAL

Appropriate utilisation of used up electric and electronic equipment helps to avoid consequences resulting from the presence of dangerous materials, as well as inappropriate disposal and processing of such equipment, which may be hazardous to human life and the environment.

Act dated 29 July 2005 on used up electric and electronic equipment, article 22.1 items 1 and 2.



According to the regulations binding in the European Union, a crossed rubbish bin symbol means that when a product is no longer used it should be disposed of at a special waste pickup site. This concerns the device itself, as well as other accessories marked with this symbol. Do not dispose of those products together with unsorted household waste. More information can be found at www.ever.eu / disposal.

Method of safe removal of the batteries from the appliance:

The batteries should be removed from the appliance by an authorised service outlet or by a duly authorised electrician.

TECHNICAL PARAMETERS

PARAMETERS	Duo II 350 Duo II Pro 350	Duo II 500 Duo II Pro 500	Duo II 800 Duo II Pro 800	Duo II 1000 Duo II Pro 1000
Output power	350VA / 210W	500VA / 300W	800VA/490W	1000VA/600W
Working environment	Office / industrial rooms with low level of pollution			
Operating temperature	+10 ÷ +35 ℃			
Storage temperature	0 ÷ +45 ℃			
Relative humidity for operation	20 ÷ 80 % (without condensation)			
Relative humidity for storage	20 ÷ 95 % (without condensation)			
Altitude (above sea level)	up to 1000 m			
Maximum length of outlet cables	< 10 m			
MAINS OPERATION MODE				
Input voltage	~190 ÷ 259 V ± 5 %			
Frequency of input voltage	45 ÷ 55 Hz ± 1 Hz			
Range of output voltage	~190 ÷ 259 V ± 5 %			
Switching thresholds: Mains-UPS	~190 / 259 V ± 5 %			
Shape of output voltage	Same as input			
Filtering of output voltage	LC			
Time to switch to battery operation mode	<6ms			
BATTERY OPERATION MODE				
Output voltage (effective value)	~230 V ±10 %			
Shape of output voltage	Modulated sinus			
Switching thresholds: UPS-mains	~200 / 249 V ± 5 %			
Frequency of output voltage	50 Hz ±1Hz			
Shorting safeguard	Electronic			
Overload protection	Electronic			
Batterry	1 x 12V / 5Ah	1 x 12V / 7 Ah	2 x 12V / 5Ah	2 x 12V / 7Ah
Maximum charging time	16 h		10 h	
Support time 100%/80%/50%Pmax	3/6/10 min	4/5.5/12 min	4/6/13 min	3/4/12 min
MECHANICAL PARAMETERS				
Dimensions (h x w x d)	192 x 85 x 253 mm		258 x 84 x 358 mm	
Weight	2.8 kg	3.7 kg	6.1 kg	7.6 kg
EQUIPMENT				
Number of outlet sockets	4 x IEC 320			
Signalling	acoustic and visual			
Cut-out	Circuit breaker			
Telecommunication filter	+			
Communication interface	USB (only DUO II Pro)			

Note: The manufacturer reserves the right to change the abovementioned parameters without notice.

INFORMATION REGARDING REGULATIONS, WARRANTY AND SUPPORT

DECLARATION OF CONFORMITY

Manufactured in People's Republic of China. The UPSs structure conforms to the appropriate subject matter standards.

WARRANTY

A separate document attached to the product constitutes the warranty. The document must meet all formal requirements (e.g. the fields: serial number, model/type, date of sale, and dealer stamp must be filled out). An unfilled warranty card or lack thereof qualifies the device for a paid repair.

The manufacturer made all efforts to ensure that products offered are free of material and workmanship defects throughout the term specified in the warranty document. The company's liability under the warranty is limited to repairs or replacement of products with such defects. The manufacturer shall make the decision as to how the defect is removed. The warranty does not cover devices with mechanical damages that occurred as a result of negligence of incorrect use nor devices subjected to any modifications made by the user.

Apart from the arrangements included in the warranty card EVER Sp. z o.o. shall not be liable for direct, indirect, specific, incidental or consequential losses incurred in the course of using the UPS, even in cases when the buyer was warned about such losses being a possibility. The company shall not be liable for any costs, such as loss of profit or revenue, cost of equipment, costs of equipment use, costs of software, data, replacement products, claims of third parties or other costs.